Review Sheet for Chemical Bonding Test

1. What types of elements form ionic bonds?
2. What types of elements form covalent bonds?
3. What group/family never forms any type of bond?
4. Know the difference between ionic and covalent bonds. What is happening with the electrons? Are they shared? Are they transferred?
5. What type of bond forms anions and cations? Which elements typically form the cation? The anion?
6. Are cations positive or negative?
7. Be able to draw the bonding between atoms (both ionic bonds and covalent bonds)
8. Be able to draw covalent bonds in which double or triple bonds are needed. Realize that in double bonds the atoms share 2 pairs of electrons and in triple bonds they share 3 pairs of electrons
9. Determine whether or not a covalently bonded molecule is polar or non-polar
10. Recognize that diatomic molecules are non-polar. What are some examples of diatomic molecules?
11. Realize that atoms bond for two main reasons:
    1. The need to fill their valence shell or at least have 8 electrons in it (Octet rule), except Hydrogen which only needs 2.
    2. Electric neutrality – want to have an overall neutral charge when bonded together
12. Recognize that electrostatic/Coulombic forces of attraction are what hold the cations and anions of ionic bonded atoms together. They also hold the “sea” of electrons in metallic bonds.
13. What are the characteristics of materials with metallic bonds? What are their physical properties? Alloys are examples of metallic bonds (steel etc)
14. What type of bond causes properties like conductivity, solubility in water, and high melting points?
15. Be able to use oxidation numbers and the crisscross tactic to get the chemical formula. For example, Sodium (Na) gives away 1 electron so ends up being +1, Oxygen takes two electrons so ends up having -2 charge.

Na+1 O-2 crisscross numbers 🡪 Na2O for the chemical formula